

Substitute Sequence Listing

<110> VERMEIJ, Paul

<120> Hybrid toxins comprising shiga or shiga-like toxin subunits fused to escherichia coli heat labile enterotoxin subunits and vaccines thereof

<130> I-2003.006 US

<150> PCT/EP2004/051522

<151> 2004-07-16

<150> EP 03077266.9

<151> 2003-07-21

<160> 4

<170> PatentIn version 3.3

<210> 1

<211> 1325

<212> DNA

<213> Escherichia coli

<220>

<221> CDS

<222> (1)..(954)

<400> 1

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Met	Met	Lys	Cys	Ile	Leu	Leu	Lys	Trp	Ile	Leu	Cys	Leu	Leu	Leu	Gly	
1				5				10						15		

48

ttt	tct	tcg	gta	tcc	tat	tcc	cag	gag	ttt	acg	ata	gac	ttt	tcg	act	
Phe	Ser	Ser	Val	Ser	Tyr	Ser	Gln	Glu	Phe	Thr	Ile	Asp	Phe	Ser	Thr	
20					25								30			

96

caa	caa	agt	tat	gta	tct	tcg	tta	aat	agt	ata	cgg	aca	gtg	ata	tcg	
Gln	Gln	Ser	Tyr	Val	Ser	Ser	Leu	Asn	Ser	Ile	Arg	Thr	Val	Ile	Ser	
35					40						45					

144

acc	cct	ctt	gaa	cat	ata	tct	cag	gga	gct	aca	tcg	gta	tcc	gtt	att	
Thr	Pro	Leu	Glu	His	Ile	Ser	Gln	Gly	Ala	Thr	Ser	Val	Ser	Val	Ile	
50					55				60							

192

aat	cat	aca	cca	gga	agt	tat	att	tcc	gta	ggt	ata	cga	ggg	ctt		
Asn	His	Thr	Pro	Pro	Gly	Ser	Tyr	Ile	Ser	Val	Gly	Ile	Arg	Gly	Leu	
65					70				75				80			

240

gat	gtt	tat	cag	gag	cgt	ttt	gac	cat	ctt	cgt	ctg	att	att	gaa	cga	
Asp	Val	Tyr	Gln	Glu	Arg	Phe	Asp	His	Leu	Arg	Leu	Ile	Ile	Glu	Arg	
85					90								95			

288

aat	aat	tta	tat	gtg	gct	gga	ttt	gtt	aat	acg	aca	aca	aat	act	ttc	
Asn	Asn	Leu	Tyr	Val	Ala	Gly	Phe	Val	Asn	Thr	Thr	Thr	Asn	Thr	Phe	
100					105								110			

336

tac	aga	ttt	tca	gat	ttt	gca	cat	ata	tca	ttg	ccc	ggt	gtg	aca	act	
Tyr	Arg	Phe	Ser	Asp	Phe	Ala	His	Ile	Ser	Leu	Pro	Gly	Val	Thr	Thr	
115					120							125				

384

att	tcc	atg	aca	acg	gac	agc	agt	tat	acc	act	ctg	caa	cgt	gtc	gca	
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432

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<211> 317

<212> PRT

<213> Escherichia coli

<400> 2

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Phe Ser Ser Val Ser Tyr Ser Gln Glu Phe Thr Ile Asp Phe Ser Thr
20 25 30

Gln Gln Ser Tyr Val Ser Ser Leu Asn Ser Ile Arg Thr Val Ile Ser
35 40 45

Thr Pro Leu Glu His Ile Ser Gln Gly Ala Thr Ser Val Ser Val Ile
50 55 60

Asn His Thr Pro Pro Gly Ser Tyr Ile Ser Val Gly Ile Arg Gly Leu
65 70 75 80

Asp Val Tyr Gln Glu Arg Phe Asp His Leu Arg Leu Ile Ile Glu Arg
85 90 95

Asn Asn Leu Tyr Val Ala Gly Phe Val Asn Thr Thr Thr Asn Thr Phe
100 105 110

Tyr Arg Phe Ser Asp Phe Ala His Ile Ser Leu Pro Gly Val Thr Thr
115 120 125

Ile Ser Met Thr Thr Asp Ser Ser Tyr Thr Thr Leu Gln Arg Val Ala
130 135 140

Ala Leu Glu Arg Ser Gly Met Gln Ile Ser Arg His Ser Leu Val Ser
145 150 155 160

Ser Tyr Leu Ala Leu Met Glu Phe Ser Gly Asn Thr Met Thr Arg Asp
165 170 175

Ala Ser Arg Ala Val Leu Arg Phe Val Thr Val Thr Ala Glu Ala Leu
180 185 190

Arg Phe Arg Gln Ile Gln Arg Glu Phe Arg Leu Ala Leu Ser Glu Thr
195 200 205

Ala Pro Val Tyr Thr Met Thr Pro Glu Asp Val Asp Leu Thr Leu Asn
210 215 220

Trp Gly Arg Ile Ser Asn Val Leu Pro Glu Tyr Arg Gly Glu Ala Gly
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225

230

235

240

Val Arg Val Gly Arg Ile Ser Phe Asn Asn Ile Ser Ala Ile Leu Gly
 245 250 255

Thr Val Ala Val Ile Leu Asn Cys Gly Asn Ser Ser Arg Thr Ile Thr
 260 265 270

Gly Asp Thr Cys Asn Glu Glu Thr Gln Asn Leu Ser Thr Ile Tyr Leu
 275 280 285

Arg Glu Tyr Gln Ser Lys Val Lys Arg Gln Ile Phe Ser Asp Tyr Gln
 290 295 300

Ser Glu Val Asp Ile Tyr Asn Arg Ile Arg Asp Glu Leu
 305 310 315

<210> 3
 <211> 1325
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (951)..(1322)

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 aatagtatac ggacagtgtat atcgaccctt cttgaacata tatctcaggg agctacatcg 180
 gtatccgtta ttaatcatac accaccagga agttatattt ccgttaggtat acgagggctt 240
 gatgttatac aggagcgttt tgaccatctt cgtctgatta ttgaacgaaa taatttatat 300
 gtggctggat ttgttaatac gacaacaaat actttctaca gatttcaga ttttgcacat 360
 atatcattgc ccgggtgtgac aactattcc atgacaacgg acagcagttt taccactctg 420
 caacgtgtcg cagcgctgga acgttccgga atgcaaatca gtcgtcactc actggttca 480
 tcataatctgg cgttaatgga gttcagtggat aatacaatga ccagagatgc atcaagagca 540
 gttctgcgtt ttgtcactgt cacagcagaa gccttacggt tcaggcaa atagagagaa 600
 tttcgtctgg cactgtctga aactgctcct gtttatacga tgacgcccggaa agacgtggac 660
 ctcactctga actgggggag aatcagcaat gtgcttccgg agtacgggg agaggctggat 720
 gtcagagtgg ggagaataatc ctttaataat atatcagcga tacttggtac tgtggccgtt 780
 atactgaatt gtggaaattc atcaagaaca atcacaggtg atacttggtaa tgaggagacc 840
 cagaatctga gcacaatata tctcaggaa tatcaatcaa aagttaagag gcagatattt 900

Substitute Sequence Listing

tcagactatc agtcagaggt tgacatatat aacagaattc gggatgaatt atg aat Met Asn 1	956
aaa gta aaa tgt tat gtt tta ttt acg gcg tta cta tcc tct cta tat Lys Val Lys Cys Tyr Val Leu Phe Thr Ala Leu Leu Ser Ser Leu Tyr 5 10 15	1004
gca cac gga gct ccc cag act att aca gaa cta tgt tcg gaa tat cgc Ala His Gly Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu Tyr Arg 20 25 30	1052
aac aca caa ata tat acg ata aat gac aag ata cta tca tat acg gaa Asn Thr Gln Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr Thr Glu 35 40 45 50	1100
tcg atg gca ggc aaa aga gaa atg gtt atc att aca ttt aag agc ggc Ser Met Ala Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys Ser Gly 55 60 65	1148
gaa aca ttt cag gtc gaa gtc ccg ggc agt caa cat ata gac tcc cag Glu Thr Phe Gln Val Glu Val Pro Gly Ser Gln His Ile Asp Ser Gln 70 75 80	1196
aaa aaa gcc att gaa agg atg aag gac aca tta aga atc aca tat ctg Lys Lys Ala Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr Tyr Leu 85 90 95	1244
acc gag acc aaa att gat aaa tta tgt gta tgg aat aat aaa acc ccc Thr Glu Thr Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys Thr Pro 100 105 110	1292
aat tca att gcg gca atc agt atg aaa aac tag Asn Ser Ile Ala Ala Ile Ser Met Lys Asn 115 120	1325

<210> 4
<211> 124
<212> PRT
<213> Escherichia coli

<400> 4

Met Asn Lys Val Lys Cys Tyr Val Leu Phe Thr Ala Leu Leu Ser Ser 1 5 10 15
Leu Tyr Ala His Gly Ala Pro Gln Thr Ile Thr Glu Leu Cys Ser Glu 20 25 30
Tyr Arg Asn Thr Gln Ile Tyr Thr Ile Asn Asp Lys Ile Leu Ser Tyr 35 40 45
Thr Glu Ser Met Ala Gly Lys Arg Glu Met Val Ile Ile Thr Phe Lys 50 55 60
Ser Gly Glu Thr Phe Gln Val Glu Val Pro Gly Ser Gln His Ile Asp 65 70 75 80

Substitute Sequence Listing

Ser Gln Lys Lys Ala Ile Glu Arg Met Lys Asp Thr Leu Arg Ile Thr
85 90 95

Tyr Leu Thr Glu Thr Lys Ile Asp Lys Leu Cys Val Trp Asn Asn Lys
100 105 110

Thr Pro Asn Ser Ile Ala Ala Ile Ser Met Lys Asn
115 120